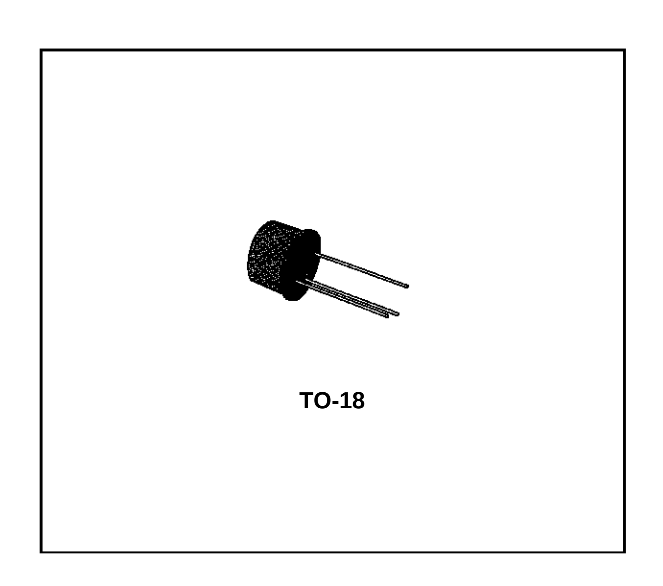
SGS-THOMSON MICROELECTRONICS

BC177
BC178-BC179

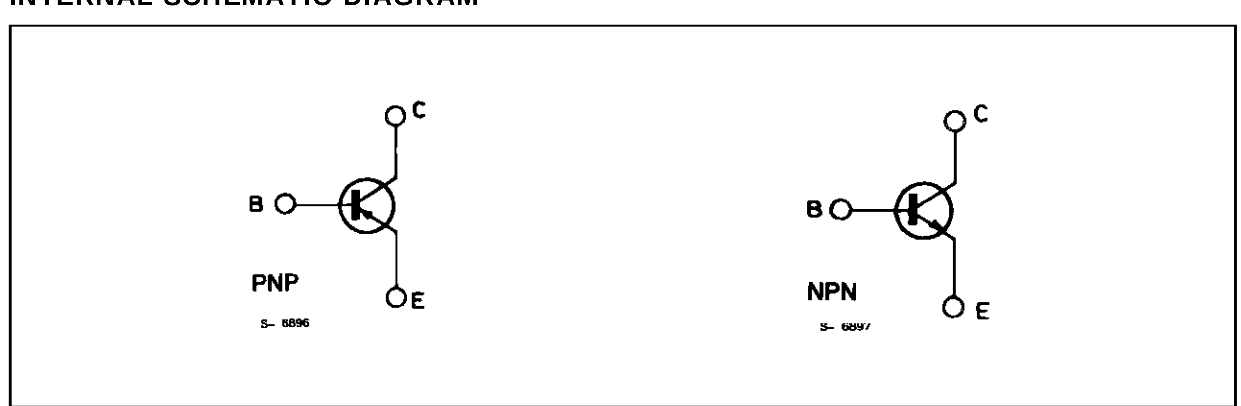
LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

DESCRIPTION

The BC177, BC178 and BC179 are silicon planar epitaxial PNP transistors in TO-18 metal case.They are suitable for use in driver audio stages, low noise input audio stages and as low power, high gain general purpose transistors. The complementary NPN types are respectively the BC107, BC108 and BC109.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BC177	BC178	BC179	
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	– 50	– 30	– 25	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	– 45	– 25	– 20	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	– 5			V
I_C	Collector Current	– 100			mA
I_{CM}	Collector Peak Current	– 200			mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C	300			mW
T_{stg}	Storage Temperature	– 65 to 175			°C
T_j	Junction Temperature	175			°C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	200	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	500	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

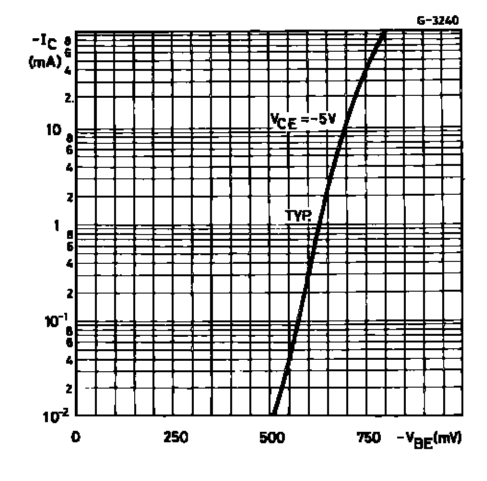
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = – 20 V V_{CE} = – 20 V T_{amb} = 150 °C		– 1	– 100 – 10	nA μA
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = – 2 mA for **BC177** for **BC178** for **BC179**	 – 45 – 25 – 20			 V V V
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage (V_{BE} = 0)	I_C = – 10 μA for **BC177** for **BC178** for **BC179**	 – 50 – 30 – 25			 V V V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = – 10 μA	– 5			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = – 10 mA I_B = – 0.5 mA I_C = – 100 mA I_B = – 5 mA		– 75 – 200	– 250	mV mV
V_{BE}*	Base-emitter Voltage	I_C = – 2 mA V_{CE} = – 5 V	– 550	– 640	– 750	mV
$V_{BE(sat)}$	Base-emitter Saturation Voltage	I_C = – 10 mA I_B = – 0.5 mA I_C = – 100 mA I_B = – 5 mA		– 720 – 860		mV mV
h_{fe}	Small Signal Current Gain	I_C = – 2 mA V_{CE} = – 5 V f = 1 kHz for **BC177** Gr. A for **BC177** Gr. B for **BC178** Gr. A for **BC178** Gr. B for **BC179** Gr. B	 125 240 125 240 240		 260 500 260 500 500	

* Pulsed : pulsed duration = 300 μs, duty cycle = 1 %.

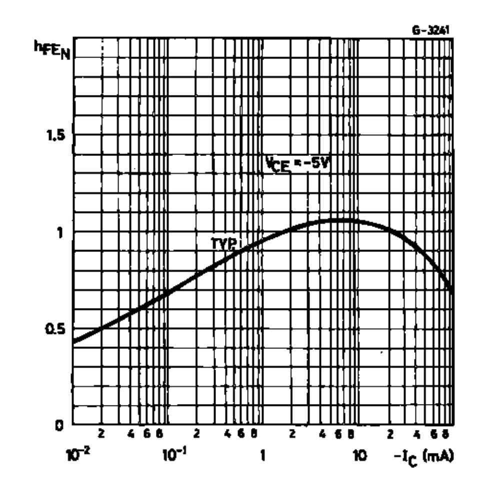
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
f_T	Transition Frequency	I_C = – 10 mA V_{CE} = – 5 V f = 100 MHz		200		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = – 10 V		5.0		pF
NF	Noise Figure	I_C = – 0.2 mA V_{CE} = – 5 V R_g = 2 kΩ f = 1 kHz B = 200 Hz for **BC177** for **BC178** for **BC179**		 2 2 1.2	 10 10 4	 dB dB dB
h_{ie}	Input Impedance	I_C = – 2 mA V_{CE} = – 5 V f = 1 kHz for **BC177** Gr. A for **BC177** Gr. B for **BC178** Gr. A for **BC178** Gr. B for **BC179** Gr. B		 2.7 5.2 2.7 5.2 5.2		 kΩ kΩ kΩ kΩ kΩ
h_{re}	Reverse Voltage Ratio	I_C = – 2 mA V_{CE} = – 5 V f = 1 kHz for **BC177** Gr. A for **BC177** Gr. B for **BC178** Gr. A for **BC178** Gr. B for **BC179** Gr. B		 2.7×10^{-4} 4.5×10^{-4} 2.7×10^{-4} 4.5×10^{-4} 4.5×10^{-4}		
h_{oe}	Output Admittance	I_C = – 2 mA V_{CE} = – 5 V f = 1 kHz for **BC177** Gr. A for **BC177** Gr. B for **BC178** Gr. A for **BC178** Gr. B for **BC179** Gr. B		 25 35 25 35 35		 µS µS µS µS µS

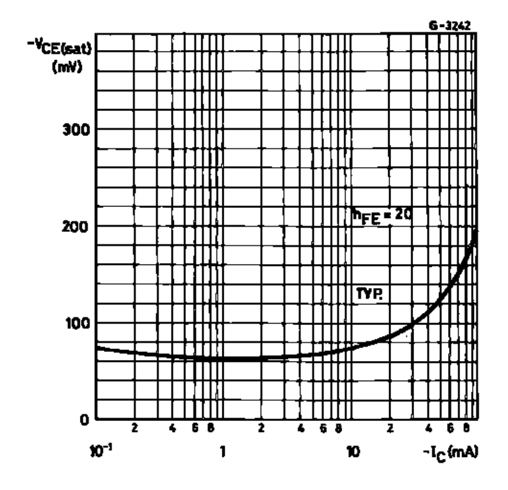
DC Transconductance.



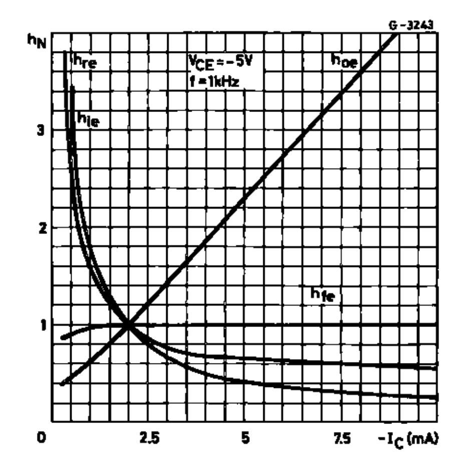
DC Normalized Current Gain.



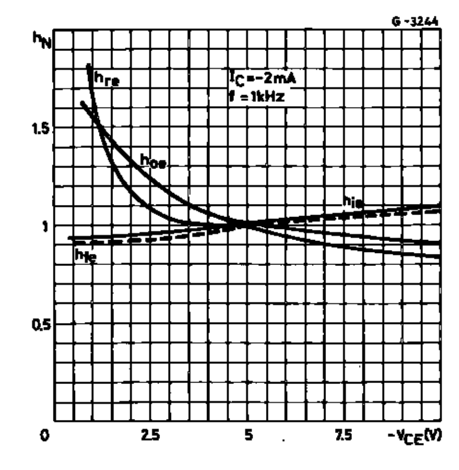
Collector-emitter Saturation Voltage.



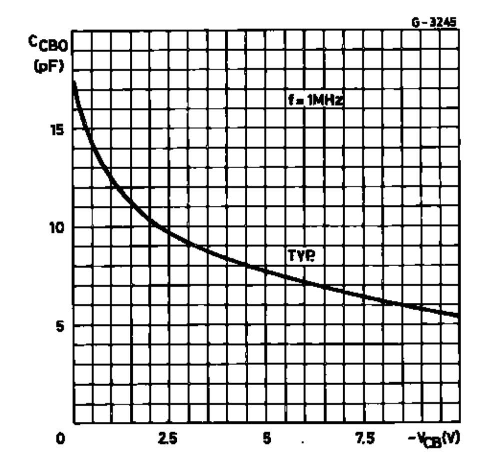
Normalized h Parameters.



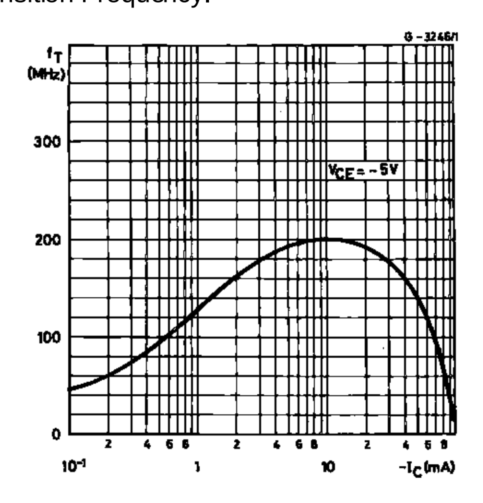
Normalized h Parameters.



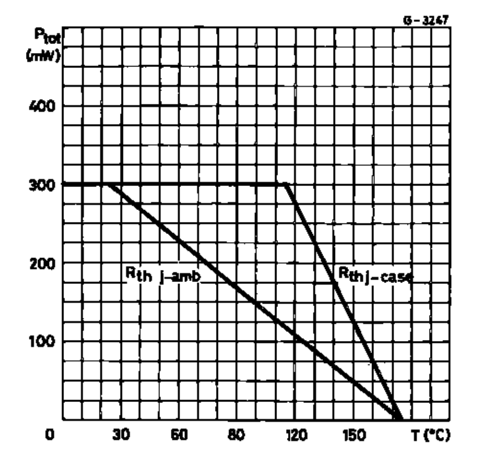
Collector-base Capacitance.



Transition Frequency.

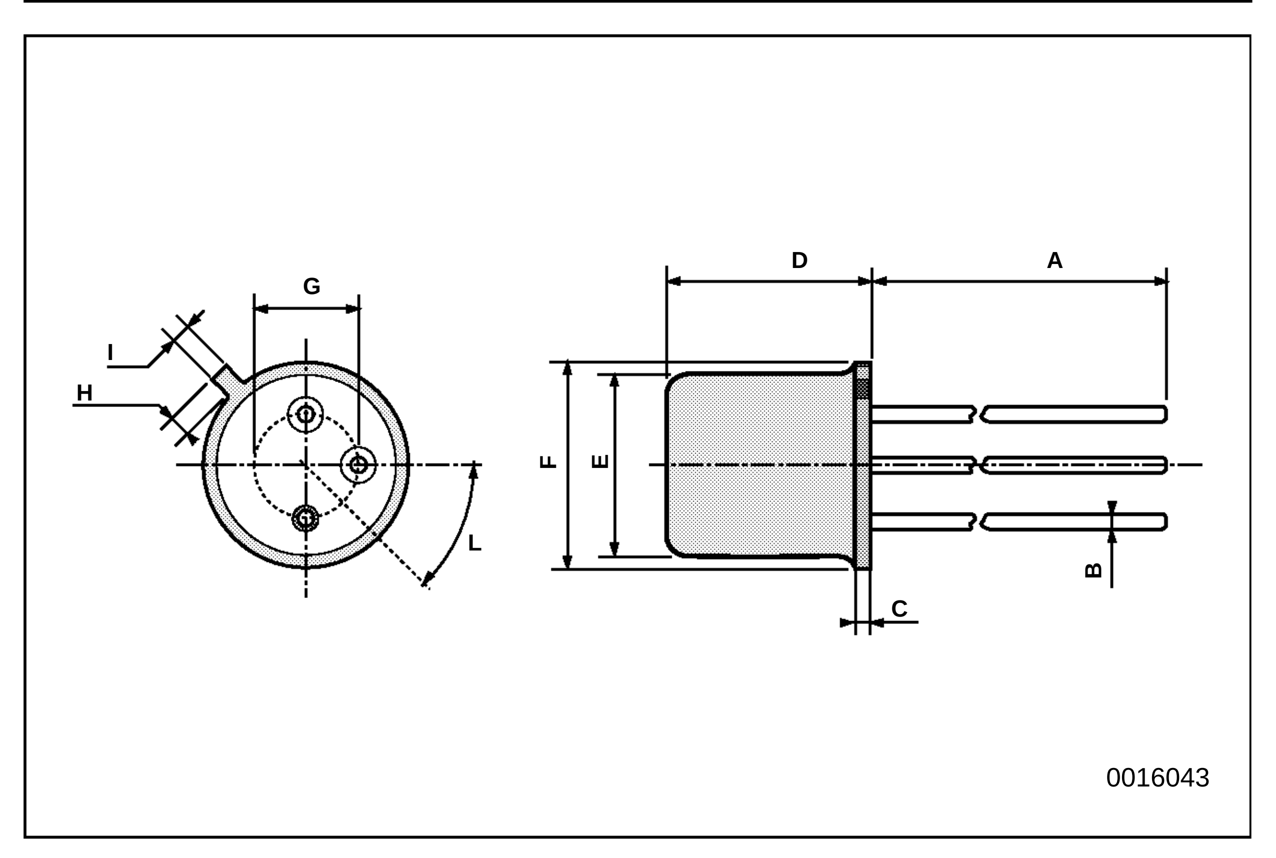


Power Rating Chart.



TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45^{o}			45^{o}		




SGS-THOMSON
MICROELECTRONICS